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PCT/DE99/04045INTERNATIONAL FILING DATE
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21 December 1999PRIORITY DATE(S) CLAIMED
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TITLE OF INVENTION

METHOD AND RECEIVER FOR RECEIVING A RADIO BROADCAST SIGNAL HAVING ENCODED CONTENTS

APPLICANT(S) FOR DO/EO/US

Matthias HERRMANN

Applicant(s) herewith submit to the United States Designated/Elected Office (DO/EO/US) the following items and other information

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) immediately rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)) (unsigned).
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☒ A substitute specification and a marked up version thereof.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information: International Search Report; International preliminary Examination Report; and Form PCT/RO/101 (English translations).

[10191/1962]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Matthias HERRMANN
Serial No. : To Be Assigned
Filed : Herewith
For : METHOD AND RECEIVER FOR RECEIVING A
RADIO BROADCAST SIGNAL HAVING
ENCODED CONTENTS

Art Unit : To Be Assigned
Examiner : To Be Assigned

Assistant Commissioner
for Patents
Washington, D.C. 20231

**PRELIMINARY AMENDMENT AND
37 C.F.R. § 1.125 SUBSTITUTE SPECIFICATION STATEMENT**

SIR:

Please amend without prejudice the above-identified application before examination, as set forth below.

IN THE TITLE:

Please amend without prejudice the title to be:

--METHOD AND RECEIVER FOR RECEIVING A RADIO BROADCAST SIGNAL HAVING
ENCODED CONTENTS--.

IN THE SPECIFICATION AND ABSTRACT:

In accordance with 37 C.F.R. § 1.121(b)(3), a Substitute Specification (including the Abstract, but without claims) accompanies this response. It is respectfully requested that the Substitute Specification (including Abstract) be entered to replace the Specification of record.

IN THE CLAIMS:

Without prejudice, please cancel original claims 1 to 13 and substitute claims 1 to 12, and please add new claims 14 to 26 as follows:

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--14. (New) A receiver for receiving a radio broadcasting signal, the receiver comprising:
a signal decoder for decoding an encoded signal contained in encoded form in the radio broadcast signal, the encoded signal including at least one of an audio signal in encoded form and a data signal in encoded form;

wherein:

the encoded signal is only decoded when the signal decoder obtains an external authentication signal that is received via an external transmission path that is different from a transmission path of the radio broadcast signal; and

at least one component of the receiver is controllable using a control signal transmittable via the external transmission path.

15. (New) The receiver of claim 14, wherein:

the external transmission path includes a mobile radio-communication device complying with a GSM/UMTS standard and connected to the receiver via a communication link;

the communication link including at least one of a wire communication link, an air communication link, and an infrared interface communication link; and

the mobile radio-communication device is for receiving the external authentication signal and transmitting it to the receiver via the communication link.

16. (New) The receiver of claim 15, wherein the mobile radio-communication device and the receiver are situated in a common housing.

17. (New) The receiver of claim 14, further comprising:

a control unit having a processor for controlling the signal decoder and predetermined components of the receiver via a control bus; and

a communication link provided between the control unit and the external transmission path, the communication link including one of a wire communication link and an infrared interface communication link;

wherein the control unit transmits the authentication signal to the signal decoder when the control unit receives the external authentication signal from the external transmission path.

18. (New) The receiver of claim 17, further comprising:

an input and output device connected to the control unit.

19. (New) The receiver of claim 14, further comprising:

a receiving part for demodulating a baseband signal from the radio
broadcasting signal; and

a post-connected audio-signal processing unit;

wherein the signal decoder is situated in a signal path between the
receiving part and the post-connected audio-signal processing unit.

20. (New) The receiver of claim 14, wherein the signal decoder includes a multiplexer, a first
looped-through signal path on which no decoding takes place, and a second signal path including
an audio decoder, the first and second signal paths being connected to the multiplexer controlled
by the audio decoder.

21. (New) The receiver of claim 20, wherein an output of the multiplexer is connected to the
post-connected audio-signal processing unit.

22. (New) The receiver of claim 20, wherein the signal decoder includes a third signal path
having a data decoder.

23. (New) The receiver of claim 22, wherein an output of the data decoder is connected to the
control unit.

24. (New) A method for receiving a radio broadcast signal, the method comprising:

decoding an encoded signal contained in encoded form in the radio
broadcast signal when an external authentication signal is received via an external
transmission path different from a transmission path of the radio broadcast signal,
the encoded signal including at least one of an audio signal in encoded form and a
data signal in encoded form; and

controlling at least one component of a receiver for the transmission path
of the radio broadcast signal using the external transmission path.

25. (New) The method of claim 24, wherein the external authentication signal is transmittable via a mobile telephony network by a mobile radio-communication device connected to the receiver by a communication interface, the communication interface including at least one of a wire communication interface, an air communication interface, and an infrared interface communication interface.

26. (New) The receiver of claim 17, wherein the predetermined components of the receiver include a data decoder having an output connected to the control unit.--.

Remarks

This Preliminary Amendment cancels without prejudice original claims 1 to 13 and substitute claims 1 to 12 in the underlying PCT Application No. PCT/DE99/04045, and adds without prejudice new claims 14 to 26. The new claims conform the claims to U.S. Patent and Trademark Office rules and do not add new matter to the application.

In accordance with 37 C.F.R. § 1.121(b)(3), the Substitute Specification (including the Abstract, but without the claims) contains no new matter. The amendments reflected in the Substitute Specification (including Abstract) are to conform the Specification and Abstract to U.S. Patent and Trademark Office rules or to correct informalities. As required by 37 C.F.R. § 1.121(b)(3)(iii) and § 1.125(b)(2), a Marked Up Version Of The Substitute Specification comparing the Specification of record and the Substitute Specification also accompanies this Preliminary Amendment. In the Marked Up Version, double-underlining indicates added text and bracketing indicates deleted text. Approval and entry of the Substitute Specification (including Abstract) is respectfully requested.

The underlying PCT Application No. PCT/DE99/04045 includes an International Search Report, dated August 4, 2000. The Search Report includes a list of documents that were uncovered in the underlying PCT Application. A copy of the Search Report accompanies this Preliminary Amendment.

The underlying PCT application also includes an International Preliminary Examination Report, dated May 17, 2001, and an annex (including Revised/Substitute Claims 1 to 12). An English translation of the International Preliminary Examination Report and the annex accompanies this Preliminary Amendment.

25. (New) The method of claim 24, wherein the external authentication signal is transmittable via a mobile telephony network by a mobile radio-communication device connected to the receiver by a communication interface, the communication interface including at least one of a wire communication interface, an air communication interface, and an infrared interface communication interface.

26. (New) The receiver of claim 17, wherein the predetermined components of the receiver include a data decoder having an output connected to the control unit.--.

Remarks

This Preliminary Amendment cancels without prejudice original claims 1 to 13 and substitute claims 1 to 12 in the underlying PCT Application No. PCT/DE99/04045, and adds without prejudice new claims 14 to 26. The new claims conform the claims to U.S. Patent and Trademark Office rules and do not add new matter to the application.

In accordance with 37 C.F.R. § 1.121(b)(3), the Substitute Specification (including the Abstract, but without the claims) contains no new matter. The amendments reflected in the Substitute Specification (including Abstract) are to conform the Specification and Abstract to U.S. Patent and Trademark Office rules or to correct informalities. As required by 37 C.F.R. § 1.121(b)(3)(iii) and § 1.125(b)(2), a Marked Up Version Of The Substitute Specification comparing the Specification of record and the Substitute Specification also accompanies this Preliminary Amendment. In the Marked Up Version, double-underlining indicates added text and bracketing indicates deleted text. Approval and entry of the Substitute Specification (including Abstract) is respectfully requested.

The underlying PCT Application No. PCT/DE99/04045 includes an International Search Report, dated August 4, 2000. The Search Report includes a list of documents that were uncovered in the underlying PCT Application. A copy of the Search Report accompanies this Preliminary Amendment.

The underlying PCT application also includes an International Preliminary Examination Report, dated May 17, 2001, and an annex (including Revised/Substitute Claims 1 to 12). An English translation of the International Preliminary Examination Report and the annex accompanies this Preliminary Amendment.

Applicant asserts that the subject matter of the present application is new, non-obvious, and useful. Prompt consideration and allowance of the application are respectfully requested.

Dated: 8/13/2001

Respectfully Submitted,
KENYON & KENYON

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[10191/1962]

METHOD AND RECEIVER FOR RECEIVING A RADIO
BROADCAST SIGNAL HAVING ENCODED CONTENTS

FIELD OF THE INVENTION

5 The present invention relates to a receiver for a radio broadcast signal, in particular a car radio or radiophone and also relates to a method for receiving a radio broadcast signal.

10 BACKGROUND INFORMATION

Program transmissions may be received in an unrestricted manner, and their use may be compensated for by the payment of appropriate taxes, e.g., to the GEMA (Gesellschaft fuer musikalische Auffuehrungs- und mechanische Vervielfaeltigungsrechte (Society for Musical Performing Rights and Mechanical Reproduction Rights)) in Germany. However, offers and program content may be desired, which go beyond such broadcast transmissions, and which may only be realized by the user at an additional cost. Such offers may be distributed in encoded form by suppliers, using conventional program transmission channels, anyone being able to receive the signal, but the information contained in it only being rendered accessible to the user, when a person has paid an appropriate usage fee.

25 To this end, a paying customer receives a decoding device, which is to be looped into the signal path, between the antenna and the receiver, and which decodes the information transmitted in encoded form. But in this case, it is believed to be disadvantageous that a separate, supplier-specific decoding device may be necessary for each supplier. Therefore, when a customer would like to accept such encoded offers, a person must first obtain a decoding device, and then may need

SUBSTITUTE SPECIFICATION

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to connect it. However, this is thought to be impractical, and it may discourage other potential customers from accepting encoded offers. Furthermore, the additional, required hardware expansion may be cost-intensive on the side of the user.

5

SUMMARY OF THE INVENTION

An object of an exemplary embodiment and/or exemplary method of the present invention is to be able to easily make additional, paid offers available in the area of program transmission.

10

For this purpose, a signal decoder, which decodes an audio signal received in encoded form in the radio broadcast signal and/or decodes a data signal received in encoded form in the radio broadcast signal, and the signal decoder is operable so that the encoded signal is only decoded, when the signal decoder obtains an external authenticating signal received via an external transmission path that is different from a transmission path of the radio broadcast signal.

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It is believed that this has the advantage that the signal decoder can be remotely controlled, without the necessity of additional authentication hardware to be individually provided for each customer. This should allow information transmitted via a radio receiver to be released in a selective and controlled manner, e.g., in exchange for fees, using a standardized receiver. Only the data supplier has to worry about the remote-controlled enabling of the signal decoder. The user does not have to make any changes to his or her device for purposes of authentication. In addition, supplier-specific hardware should not be necessary, so that offers of various suppliers can be accepted, using a single device.

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To distribute individual authorizations, the external transmission path advantageously includes a mobile

SUBSTITUTE SPECIFICATION

radio-communications device (mobile transceiver), which especially complies with the GSM standard, and is connected to the receiver via a communication link, in particular via a wire, infrared, or air interface, the mobile radio device receiving the authentication signal and transmitting it to the receiver, via the communication link.

A unified device, such as a radiophone, is made available by positioning (mounting) the mobile radio-communications device and the receiver in a common housing.

An exemplary embodiment provides a control unit, especially in the form of a processor, which controls the signal decoder and additional, predetermined components of the receiver, via a control bus. A communication link, in particular a wire, infrared, or air interface, is provided between the control unit and the external transmission path, and the control unit transmits the authentication signal to the signal decoder, when the control unit receives the authentication signal from the external transmission path.

An input device that is connected to the control unit may be advantageously provided for the user to input data and commands.

A receiving part, which demodulates a baseband signal from a radio broadcast signal, and a post-connected audio-signal processing unit may be provided in an exemplary embodiment, the signal decoder being situated in a signal path, between the receiving part and the audio-signal processing unit.

To select between decoding or not decoding an audio signal transmitted with the radio broadcast signal, the signal decoder has a multiplexer, a first, looped-through signal path on which no decoding takes place, and a second signal path having an audio decoder, the first and second signal paths being connected to the multiplexer that is controlled by the

audio decoder. In this connection, an output of the multiplexer is connected to the audio-signal processing unit.

To select between decoding or not decoding a data signal transmitted with the radio broadcast signal, the signal decoder has a third signal path that includes a data decoder. In this connection, an output of the data decoder is connected to the control unit.

The exemplary method according to the present invention provides for an audio signal contained in the radio broadcast signal in encoded form and/or a data signal contained in the radio broadcast signal in encoded form being decoded, when an external authentication signal is received via an external transmission path that is different from the transmission path of the radio broadcast signal.

It is believed that this has the advantage that paid offers can be made available per remote control, without the necessity of additional authentication hardware to be individually provided to each customer. Therefore, information may be transmitted via a radio receiver to be released in a selective and controlled manner, e.g., in exchange for fees, using a standardized receiver. Only the supplier of the encoded data signal or audio signal must worry about the remote-controlled enabling of a signal decoder. The user does not have to make any changes to his or her device for purposes of authentication. In addition, supplier-specific hardware should not be necessary, so that offers of various suppliers can be accepted, using a single device.

To distribute individual authentications, the authentication signal is transmitted via a mobile telephony network (mobile radio network), to a mobile radio-communications device connected to the receiver by a communications interface, especially by a wire, infrared, or air interface.

A receiver for the transmission path of the radio broadcast signal may be advantageously controlled via the external transmission path.

5 BRIEF DESCRIPTION OF THE DRAWING

The Figure shows an exemplary embodiment of a receiver according to the present invention.

DETAILED DESCRIPTION

10 The receiver 100 of the Figure includes an AM/FM receiving part 10, a signal decoder 12, an audio-signal processing unit 14, an audio power amplifier 16, loudspeaker 18, a control unit 20, a mobile radio-communications part 22 (GSM = Global System for Mobile Communication), and an output and input (input/output) device 24. Signal decoder 12 includes an audio decoder 26, a data decoder 28, and a multiplexer 30. Control unit 20 controls AM/FM receiving part 10, audio decoder 26, and data decoder 28, using a control bus 32. Data decoder 28 has a digital output (data output) 34, which is connected to control unit 20, and via which the control data and user data are transmitted to control unit 20.

20 A demodulated baseband signal coming from AM/FM receiving part 10 is directed to signal decoder 12, which has three signal branches 36, 38, and 40. First signal branch 36 allows the audio signal to pass through without being affected, second signal branch 38 decodes the audio signal previously encoded on the side of the transmitter, and third signal branch 40 decodes a data stream, which is processed further in control unit 20, e.g., in a processor. By way of multiplexer 30, the two audio signals of the specific signal branches 36, 38 arrive in the block, audio-signal processing 14, which carries out or performs conventional functions, such as sound control, volume control, balance control, or fade control. Which of the signal branches 36 or 38 is presently active at signal decoder 12, depends on the control data transmitted via control bus 32.

SUBSTITUTE SPECIFICATION

Mobile radio-communications part 22 communicates with input device 24 via control unit 20, the input device also being referred to as an MMI (man-machine interface). The control unit evaluates, in part, the data stream coming from mobile radio-communications part 22, and selects appropriate data for controlling signal decoder 12 and, if present, AM/FM receiving part 10. So if mobile radio-communications part 22 receives an appropriate authentication signal, then control unit 20 transmits a corresponding authentication signal via signal bus 32, in order to activate audio decoder 26 and/or data decoder 28.

Therefore, the exemplary embodiment and/or exemplary method of the present invention provides for signal decoder 12 being inserted in the branch of the demodulated baseband of a first transmission path, in this case AM/FM receiver 10, certain signals or data in the baseband signal of the AM/FM receiver being blocked or decoded per remote control, via a second transmission path, in this case a mobile telephony network. As a further option, AM/FM receiver 10 can also be remotely controlled via the second transmission path (mobile telephony network), in order to, for example, select a channel. Corresponding encoding is provided on the transmission side, in the transmission path of AM/FM receiver 10. Furthermore, there is communication between the broadcasting network and the mobile telephony network.

In another exemplary embodiment and/or exemplary method of the present invention, there is provided a combination of a car radio and a mobile radio-communications device in a 1-DIN housing, which is expanded to include the above-mentioned present invention. However, there may also be an arbitrary combination of AM/FM receiving part 10 and mobile radio-communications device 22, which must not necessarily be integrated in a housing. For example, a so-called cellular phone may communicate with a car-radio device via a wire, infrared, or air interface.

ABSTRACT OF THE DISCLOSURE

A receiver for a radio broadcast signal, in particular a car radio, and a method for receiving a radio broadcast signal, including a signal decoder for decoding an audio signal
5 contained in the radio broadcast signal in encoded form, and/or for decoding a data signal contained in the radio broadcast signal in encoded form, the signal decoder being operable so that the encoded signal is only decoded, when the
10 signal decoder obtains an external authentication signal, which is received via an external transmission path that is different from the transmission path of the radio broadcast signal.

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[10191/1962]

METHOD AND RECEIVER FOR RECEIVING A
RADIO BROADCAST SIGNAL HAVING ENCODED CONTENTS[Technical Field]5 FIELD OF THE INVENTION

The present invention relates to a receiver for a radio broadcast signal, in particular a car radio or radiophone[, according to the definition of the species in Claim 1. In addition, the present invention] and also relates to a method
10 for receiving a radio broadcast signal[, according to the definition of the species in Claim 11.

Background Information

15 Conventional program].

BACKGROUND INFORMATION

Program transmissions [can] may be received in an unrestricted manner, and their use [is] may be compensated for by the
20 payment of appropriate taxes, e.g., to the GEMA

[[](Gesellschaft fuer musikalische Auffuehrungs- und mechanische Vervielfaeltigungsrechte (Society for Musical Performing Rights and Mechanical Reproduction Rights) [)] in Germany. However, offers and program content [are often] may be
25 desired, which go beyond [conventional] such broadcast transmissions, and [can] which may only be realized by the user at an additional cost. Such offers may be distributed in encoded form by suppliers, using conventional program transmission channels, anyone being able to receive the
30 signal, but the information contained in it only being rendered accessible to the user, when [he or she] a person has paid an appropriate usage fee.

To this end, a paying customer receives a decoding device,
35 which is to be looped into the signal path, between the

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antenna and the receiver, and which decodes the information transmitted in encoded form. But in this case, it is believed to be disadvantageous that a separate, supplier-specific decoding device [is] may be necessary for each supplier.

5 Therefore, when a customer would like to accept such encoded offers, [he or she] a person must first obtain a decoding device, and [generally] then may need to connect it [himself or herself.]. However, this is thought to be impractical, and it may discourage [s many] other potential customers from accepting encoded offers. Furthermore, the additional, required hardware expansion [is] may be cost-intensive on the side of the user. [

15 Description of the Present Invention, Object, Solution, Advantages

The object]

20 SUMMARY OF THE INVENTION

An object of an exemplary embodiment and/or exemplary method of the present invention is to be able to easily make additional, paid offers available in the area of program transmission.

25 [This object is achieved by a receiver of the type mentioned above, having the features indicated in Claim 1, and by a method of the type mentioned above, having the features indicated in Claim 11.

30]For this purpose, [the present invention provides a receiver of the type mentioned above with]a signal decoder, which decodes an audio signal received in encoded form in the radio broadcast signal and/or decodes a data signal received in encoded form in the radio broadcast signal, and the signal decoder [being designed in such a manner,] is operable so that the encoded signal is only decoded, when the signal decoder

obtains an external authenticating signal received via an external transmission path that is different from a transmission path of the radio broadcast signal.

5 [T]It is believed that this has the advantage[,] that the signal decoder can be remotely controlled, without the necessity of additional authentication hardware to be individually provided for each customer. This should allow[s] information transmitted via [[by]]a radio receiver to be
10 released in a selective and controlled manner, e.g., in exchange for fees, using a standardized receiver. Only the data supplier has to worry about the remote-controlled enabling of the signal decoder. The user does not have to make any changes to his or her device for purposes of
15 authentication. In addition, supplier-specific hardware [is]should not be necessary, so that offers of various suppliers can be accepted, using a single device.

[Preferred further refinements of the receiver are described in Claims 2 through 10.

In order t]To distribute individual authorizations, the external transmission path advantageously includes a mobile radio-communications device [[](mobile transceiver[])], which
25 especially complies with the GSM standard, and is connected to the receiver via a communication link, in particular via a wire, infrared, or air interface, the mobile radio device receiving the authentication signal and transmitting it to the receiver, via the communication link.

30 A unified device, such as a radiophone, is made available by positioning [[](mounting[])] the mobile radio-communications device and the receiver in a common housing.

35 A[preferred]n exemplary embodiment provides a control unit, especially in the form of a processor, which controls the signal decoder and additional, predetermined components of the

receiver, via a control bus[; a]. A communication link, in particular a wire, infrared, or air interface, [being] is provided between the control unit and the external transmission path, and the control unit

5 [transmitting] transmits the authentication signal to the signal decoder, when the control unit receives the authentication signal from the external transmission path.

10 An input device that is connected to the control unit [is] may be advantageously provided for the user to input data and commands.

15 A receiving part, which demodulates a baseband signal from a radio broadcast signal, and a post-connected audio-signal processing unit [are] may be provided in a [preferred, specific] n exemplary embodiment, the signal decoder being situated in a signal path, between the receiving part and the audio-signal processing unit.

20 [In order t] To select between decoding or not decoding an audio signal transmitted with the radio broadcast signal, the signal decoder has a multiplexer, a first, looped-through signal path on which no decoding takes place, and a second signal path having an audio decoder, the first and second
25 signal paths being connected to the multiplexer that is controlled by the audio decoder. In this connection, an output of the multiplexer is connected to the audio-signal processing unit.

30 [In order t] To select between decoding or not decoding a data signal transmitted with the radio broadcast signal, the signal decoder has a third signal path that includes a data decoder. In this connection, an output of the data decoder is connected to the control unit.

35 The [above-mentioned type of] exemplary method according to the present invention provides for an audio signal contained in

the radio broadcast signal in encoded form and/or a data
signal contained in the radio broadcast signal in encoded form
being decoded, when an external authentication signal is
received via an external transmission path that is different
from the transmission path of the radio broadcast signal.

[T]It is believed that this has the advantage[,] that paid
offers can be made available per remote control, without the
necessity of additional authentication hardware to be
individually provided to each customer. Therefore, [it is
possible for]information may be transmitted via [[by]]a
radio receiver to be released in a selective and controlled
manner, e.g., in exchange for fees, using a standardized
receiver. Only the supplier of the encoded data signal or
audio signal must worry about the remote-controlled enabling
of a signal decoder. The user does not have to make any
changes to his or her device for purposes of authentication.
In addition, supplier-specific hardware [is]should not be
necessary, so that offers of various suppliers can be
accepted, using a single device.

[Advantageous refinements of the method are described in
Claims 12 and 13.

In order t]To distribute individual authentications, the
authentication signal is transmitted via a mobile telephony
network [](mobile radio network)[)], to a mobile
radio-communications device connected to the receiver by a
communications interface, especially by a wire, infrared, or
air interface.

A receiver for the transmission path of the radio broadcast
signal [is]may be advantageously controlled via the external
transmission path.

[Brief Description of the Drawing

The present invention is explained below in detail, using the enclosed drawing. The one figure of the drawing shows a preferred] BRIEF DESCRIPTION OF THE DRAWING

The Figure shows an exemplary embodiment of a receiver according to the present invention.

[Best Mode of Implementing the Present Invention

The preferred embodiment of a receiver 100 according to the present invention, represented in Figure 1,] DETAILED DESCRIPTION

The receiver 100 of the Figure includes an AM/FM receiving part 10, a signal decoder 12, an audio-signal processing unit 14, an audio power amplifier 16, loudspeaker 18, a control unit 20, a mobile radio-communications part 22 (GSM = Global System for Mobile Communication), and an output and input [] (input/output []) device 24. Signal decoder 12 includes an audio decoder 26, a data decoder 28, and a multiplexer 30. Control unit 20 controls AM/FM receiving part 10, audio decoder 26, and data decoder 28, using a control bus 32. Data decoder 28 has a digital output [] (data output []) 34, which is connected to control unit 20, and via which the control data and user data are transmitted to control unit 20.

A demodulated baseband signal coming from AM/FM receiving part 10 is directed to signal decoder 12, which has three signal branches 36, 38, and 40. First signal branch 36 allows the audio signal to pass through without being affected, second signal branch 38 decodes the audio signal previously encoded on the side of the transmitter, and third signal branch 40 decodes a data stream, which is processed further in control unit 20, e.g. in a processor. By way of multiplexer 30, the two audio signals of the specific signal branches 36, 38 arrive in the block, audio-signal processing 14, which carries out or performs conventional functions, such as sound control, volume control, balance control, or fade control. Which of the signal branches 36 or 38 is presently active at signal decoder

12, depends on the control data transmitted via control bus 32.

Mobile radio-communications part 22 communicates with input device 24 via control unit 20, the input device also being referred to as an MMI (man-machine interface). The control unit evaluates, [inter alia]in part, the data stream coming from mobile radio-communications part 22, and selects appropriate data for controlling signal decoder 12 and, if present, AM/FM receiving part 10. So if mobile radio-communications part 22 receives an appropriate authentication signal, then control unit 20 transmits a corresponding authentication signal via signal bus 32, in order to activate audio decoder 26 and/or data decoder 28.

Therefore, the exemplary embodiment and/or exemplary method of the present invention provides for signal decoder 12 being inserted in the branch of the demodulated baseband of a first transmission path, in this case AM/FM receiver 10, certain signals or data in the baseband signal of the AM/FM receiver being blocked or decoded per remote control, via a second transmission path, in this case a mobile telephony network. As a further option, AM/FM receiver 10 can also be remotely controlled via the second transmission path (mobile telephony network), in order to, for example, select a channel. Corresponding encoding is provided on the transmission side, in the transmission path of AM/FM receiver 10. Furthermore, there is communication between the broadcasting network and the mobile telephony network.

In [a particularly preferred, specific]another exemplary embodiment[,] and/or exemplary method of the present invention, there is provide[s]d a combination of a car radio and a mobile radio-communications device in a 1-DIN housing, which is expanded to include the above-mentioned present invention. However, [it is]there may also [possible to have]be an arbitrary combination of AM/FM receiving part 10 and mobile

radio-communications device 22, which must not necessarily be integrated in a housing. For example, a so-called cellular phone may communicate with a car-radio device via a wire, infrared, or air interface.

[Abstract

]

ABSTRACT OF THE DISCLOSURE

[The present invention relates to a] A receiver[(100)] for a
radio broadcast signal, in particular a car radio, [as well
5 as] and a method for receiving a radio broadcast signal[. In
this connection,], including a signal decoder [(12) is
provided, which decodes] for decoding an audio signal contained
in the radio broadcast signal in encoded form, and/or
[decodes] for decoding a data signal contained in the radio
10 broadcast signal in encoded form, the signal decoder [(12)
]being [designed in such a manner,] operable so that the
encoded signal is only decoded, when the signal decoder[(12)]
obtains an external authentication signal, which is received
via an external transmission path that is different from the
15 transmission path of the radio broadcast signal.

[(Fig.)]

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[10191/1962]

METHOD AND RECEIVER FOR RECEIVING A
RADIO BROADCAST SIGNAL HAVING ENCODED CONTENTS

Technical Field

The present invention relates to a receiver for a radio broadcast signal, in particular a car radio or radiophone, according to the definition of the species in Claim 1. In addition, the present invention relates to a method for receiving a radio broadcast signal, according to the definition of the species in Claim 11.

Background Information

Conventional program transmissions can be received in an unrestricted manner, and their use is compensated for by the payment of appropriate taxes, e.g. to the GEMA [Gesellschaft für musikalische Aufführungs- und mechanische Vervielfältigungsrechte (Society for Musical Performing Rights and Mechanical Reproduction Rights)] in Germany. However, offers and program content are often desired, which go beyond conventional broadcast transmissions, and can only be realized by the user at an additional cost. Such offers may be distributed in encoded form by suppliers, using conventional program transmission channels, anyone being able to receive the signal, but the information contained in it only being rendered accessible to the user, when he or she has paid an appropriate usage fee. To this end, a paying customer receives a decoding device, which is to be looped into the signal path, between the antenna and the receiver, and which decodes the information transmitted in encoded form. But in this case, it is disadvantageous that a separate, supplier-specific decoding device is necessary for each supplier. Therefore, when a customer would like to accept such encoded offers, he or she must first obtain a decoding device, and generally connect it himself or herself. However, this is thought to be

impractical, and it discourages many potential customers from accepting encoded offers. Furthermore, the additional, required hardware expansion is cost-intensive on the side of the user.

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Description of the Present Invention, Object, Solution, Advantages

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The object of the present invention is to be able to easily make additional, paid offers available in the area of program transmission.

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This object is achieved by a receiver of the type mentioned above, having the features indicated in Claim 1, and by a method of the type mentioned above, having the features indicated in Claim 11.

20

For this purpose, the present invention provides a receiver of the type mentioned above with a signal decoder, which decodes an audio signal received in encoded form in the radio broadcast signal and/or decodes a data signal received in encoded form in the radio broadcast signal, the signal decoder being designed in such a manner, that the encoded signal is only decoded, when the signal decoder obtains an external authenticating signal received via an external transmission path that is different from a transmission path of the radio broadcast signal.

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This has the advantage, that the signal decoder can be remotely controlled, without the necessity of additional authentication hardware to be individually provided for each customer. This allows information transmitted via [by] a radio receiver to be released in a selective and controlled manner, e.g. in exchange for fees, using a standardized receiver. Only the data supplier has to worry about the remote-controlled enabling of the signal decoder. The user does not have to make any changes to his or her device for purposes of

35

authentication. In addition, supplier-specific hardware is not necessary, so that offers of various suppliers can be accepted, using a single device.

5 Preferred further refinements of the receiver are described in Claims 2 through 10.

10 In order to distribute individual authorizations, the external transmission path advantageously includes a mobile radio-communications device [mobile transceiver], which especially complies with the GSM standard, and is connected to the receiver via a communication link, in particular via a wire, infrared, or air interface, the mobile radio device receiving the authentication signal and transmitting it to the receiver, via the communication link.

15 A unified device, such as a radiophone, is made available by positioning [mounting] the mobile radio-communications device and the receiver in a common housing.

20 A preferred embodiment provides a control unit, especially in the form of a processor, which controls the signal decoder and additional, predetermined components of the receiver, via a control bus; a communication link, in particular a wire, infrared, or air interface, being provided between the control unit and the external transmission path, and the control unit transmitting the authentication signal to the signal decoder, when the control unit receives the authentication signal from the external transmission path.

25 30 An input device that is connected to the control unit is advantageously provided for the user to input data and commands.

35 A receiving part, which demodulates a baseband signal from a radio broadcast signal, and a post-connected audio-signal processing unit are provided in a preferred, specific

embodiment, the signal decoder being situated in a signal path, between the receiving part and the audio-signal processing unit.

5 In order to select between decoding or not decoding an audio signal transmitted with the radio broadcast signal, the signal decoder has a multiplexer, a first, looped-through signal path on which no decoding takes place, and a second signal path having an audio decoder, the first and second signal paths
10 being connected to the multiplexer that is controlled by the audio decoder. In this connection, an output of the multiplexer is connected to the audio-signal processing unit.

15 In order to select between decoding or not decoding a data signal transmitted with the radio broadcast signal, the signal decoder has a third signal path that includes a data decoder. In this connection, an output of the data decoder is connected to the control unit.

20 The above-mentioned type of method according to the present invention provides for an audio signal contained in the radio broadcast signal in encoded form and/or a data signal contained in the radio broadcast signal in encoded form being decoded, when an external authentication signal is received
25 via an external transmission path that is different from the transmission path of the radio broadcast signal.

This has the advantage, that paid offers can be made available per remote control, without the necessity of additional
30 authentication hardware to be individually provided to each customer. Therefore, it is possible for information transmitted via [by] a radio receiver to be released in a selective and controlled manner, e.g. in exchange for fees, using a standardized receiver. Only the supplier of the
35 encoded data signal or audio signal must worry about the remote-controlled enabling of a signal decoder. The user does not have to make any changes to his or her device for purposes

of authentication. In addition, supplier-specific hardware is not necessary, so that offers of various suppliers can be accepted, using a single device.

5 Advantageous refinements of the method are described in Claims 12 and 13.

10 In order to distribute individual authentications, the authentication signal is transmitted via a mobile telephony network [mobile radio network], to a mobile radio-communications device connected to the receiver by a communications interface, especially by a wire, infrared, or air interface.

15 A receiver for the transmission path of the radio broadcast signal is advantageously controlled via the external transmission path.

20 Brief Description of the Drawing

The present invention is explained below in detail, using the enclosed drawing. The one figure of the drawing shows a preferred embodiment of a receiver according to the present invention.

25 Best Mode of Implementing the Present Invention

30 The preferred embodiment of a receiver 100 according to the present invention, represented in Figure 1, includes an AM/FM receiving part 10, a signal decoder 12, an audio-signal processing unit 14, an audio power amplifier 16, loudspeaker 18, a control unit 20, a mobile radio-communications part 22 (GSM = Global System for Mobile Communication), and an output and input [input/output] device 24. Signal decoder 12 includes
35 an audio decoder 26, a data decoder 28, and a multiplexer 30. Control unit 20 controls AM/FM receiving part 10, audio decoder 26, and data decoder 28, using a control bus 32. Data

decoder 28 has a digital output [data output] 34, which is connected to control unit 20, and via which the control data and user data are transmitted to control unit 20.

5 A demodulated baseband signal coming from AM/FM receiving part 10 is directed to signal decoder 12, which has three signal branches 36, 38, and 40. First signal branch 36 allows the audio signal to pass through without being affected, second
10 signal branch 38 decodes the audio signal previously encoded on the side of the transmitter, and third signal branch 40 decodes a data stream, which is processed further in control unit 20, e.g. in a processor. By way of multiplexer 30, the two audio signals of the specific signal branches 36, 38 arrive in the block, audio-signal processing 14, which carries
15 out conventional functions, such as sound control, volume control, balance control, or fade control. Which of the signal branches 36 or 38 is presently active at signal decoder 12, depends on the control data transmitted via control bus 32.

20 Mobile radio-communications part 22 communicates with input device 24 via control unit 20, the input device also being referred to as an MMI (man-machine interface). The control unit evaluates, inter alia, the data stream coming from mobile radio-communications part 22, and selects appropriate data for
25 controlling signal decoder 12 and, if present, AM/FM receiving part 10. So if mobile radio-communications part 22 receives an appropriate authentication signal, then control unit 20 transmits a corresponding authentication signal via signal bus 32, in order to activate audio decoder 26 and/or data decoder
30 28.

Therefore, the present invention provides for signal decoder 12 being inserted in the branch of the demodulated baseband of a first transmission path, in this case AM/FM receiver 10,
35 certain signals or data in the baseband signal of the AM/FM receiver being blocked or decoded per remote control, via a second transmission path, in this case a mobile telephony

network. As a further option, AM/FM receiver 10 can also be remotely controlled via the second transmission path (mobile telephony network), in order to, for example, select a channel. Corresponding encoding is provided on the transmission side, in the transmission path of AM/FM receiver 10. Furthermore, there is communication between the broadcasting network and the mobile telephony network.

In a particularly preferred, specific embodiment, the present invention provides a combination of a car radio and a mobile radio-communications device in a 1-DIN housing, which is expanded to include the above-mentioned present invention. However, it is also possible to have an arbitrary combination of AM/FM receiving part 10 and mobile radio-communications device 22, which must not necessarily be integrated in a housing. For example, a so-called cellular phone may communicate with a car-radio device via a wire, infrared, or air interface.

What is claimed is:

1. A receiver (100) for a radio broadcasting signal, in particular a car radio or radiophone, wherein a signal decoder (12) is provided, which decodes an audio signal contained in the radio broadcast signal in encoded form, and/or decodes a data signal contained in the radio broadcast signal in encoded form, the signal decoder (12) being designed in such a manner, that the encoded signal is only decoded, when the signal decoder (12) obtains an external authentication signal, which is received via an external transmission path that is different from a transmission path of the radio broadcast signal.

2. The receiver (100) as recited in Claim 1, wherein the external transmission path includes a mobile radio-communications device (22), which especially complies with the GSM/UMTS standard, and is connected to the receiver (100) via a communication link, in particular via a wire, air, or infrared interface, the mobile radio-communications device (22) receiving the authentication signal and transmitting it to the receiver (100), via the communication link.

3. The receiver (100) as recited in Claim 2, wherein the mobile radio-communications device (22) and the receiver (100) are situated in a common housing.

4. The receiver (100) as recited in one of the preceding claims, wherein a control unit (20), especially in the form of a processor, is provided, which controls the signal decoder (12) and additional, predetermined components (26, 28) of the receiver (100), via a control bus (32); a communication link, in particular a wire or infrared interface, being provided between the control unit (20) and the external transmission path (22), and the control unit (20) transmitting the authentication signal to the signal decoder (12), when the control unit (20) receives the authentication signal from the

external transmission path (22).

5. The receiver (100) as recited in one of the preceding claims, wherein an output and input device [input/output device] (24) is provided, which is connected to the control unit (20).

6. The receiver (100) as recited in one of the preceding claims, wherein a receiving part (10), which demodulates a baseband signal from the radio broadcast signal, and a post-connected audio-signal processing unit (14), are provided, the signal decoder (12) being situated in a signal path between the receiving part (10) and the audio-signal processing unit (14).

7. The receiver (100) as recited in one of the preceding claims, wherein the signal decoder (12) has a multiplexer (30), a first, looped-through signal path (36) on which no decoding takes place, and a second signal path (38) having an audio decoder (26), the first and second signal paths (36, 38) being connected to the multiplexer (30) that is controlled by the audio decoder (26).

8. The receiver (100) as recited in Claim 6 and 7, wherein an output of the multiplexer (30) is connected to the audio-signal processing unit (14).

9. The receiver (100) as recited in one of the preceding claims, wherein the signal decoder (12) has a third signal path (40) that includes a data decoder (28).

10. The receiver (100) as recited in Claims 4 and 9, wherein an output (34) of the data decoder (28) is connected to the control unit (20).

11. A method for receiving a radio broadcast signal, wherein an audio signal contained in the radio broadcast signal in

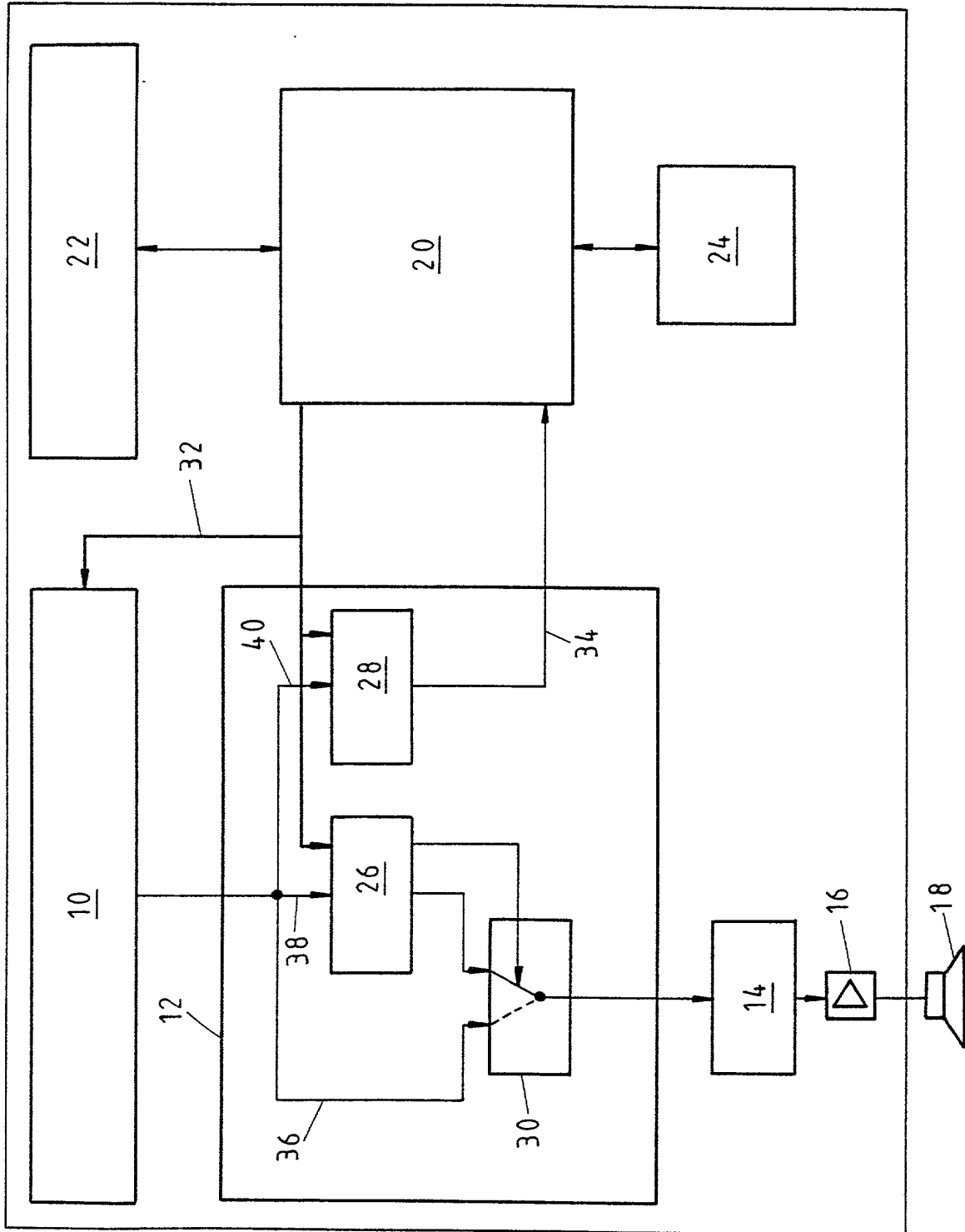
encoded form and/or a data signal contained in the radio broadcast signal in encoded form is decoded, when an external authentication signal is received via an external transmission path that is different from the transmission path of the radio broadcast signal.

12. The method as recited in Claim 11, wherein the authentication signal is transmitted via a mobile telephony network [mobile radio network], by a mobile radio-communications device connected to the receiver by a communications interface, in particular a wire, air, or infrared interface.

13. The method as recited in Claim 11 or 12, wherein a receiver for the transmission path of the radio broadcast signal is controlled via an external transmission path.

Patent 9,464,650

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[10191/1962]

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **METHOD AND RECEIVER FOR RECEIVING A RADIO BROADCAST SIGNAL HAVING ENCODED CONTENTS**, the specification of which was filed as PCT International Application No. **PCT/DE99/04045** on December 21, 1999 ✓

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

~~EL244504342~~
EV00362451845

PRIOR FOREIGN APPLICATION(S)

Number	Country filed	Day/month/year	Priority Claimed Under 35 USC 119
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199 05 628.5 /	Fed. Rep. of Germany /	11 February 1999 /	Yes /
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And I hereby appoint Richard L. Mayer (Reg. No. 22,490) and Gerard A. Messina (Reg. No. 35,952) my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful and false statements may jeopardize the validity of the application or any patent issued thereon.

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